

**Quick Draw** helps students develop

1. mental imagery
2. recognition of shapes
3. analysis of mental images
4. spatial memory
5. concept of symmetry
6. geometric vocabulary
7. negotiate social norms

# QUICK DRAW

## TEACHER MATERIALS AND PREPARATION:

1. Three or four Quick Draw transparencies.
2. Overhead projector (OH)
3. Blank paper for covering

## STUDENT MATERIALS:

1. A pencil
2. unlined paper divided like this:



Whole  
class

**"I will show you a shape for only a few seconds. Try to make a mental picture so you can draw it after I turn off the projector. Ready? On the count of three, ONE, TWO, THREE."**

Turn on OH. Show the line pattern for 3 seconds. Turn off OH.

When most people have drawn all they can, prepare to show it to the students again.

**"I will now give you another look. Ready?"**

Show for 3 seconds.

When most people have drawn all they can, turn on the OH and leave it on. Some students will be able to draw it looking at the shape when they could not draw it otherwise.



Whole class  
discussion

The discussion of their drawings is the heart of the activity.

**"What did you see and how did you draw it?"**

Encourage students to talk about their drawing. Do not rush the discussion.

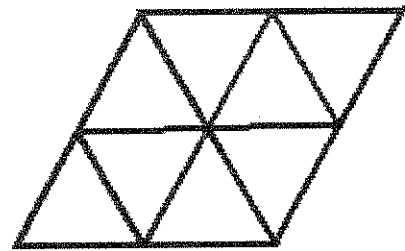
Let it continue as long as new ideas are being put forth. Some students will be inspired by what others say. It is not unusual for five or more different ways of seeing the figure to be described.

## Where's the Math in Quick Draw?

Quick Draw develops spatial sense. Being able to image mathematical concepts and relationships leads to success in mathematics. Much, if not all, mathematics is image-based. Quick Draw develops one aspect of spatial ability and can enhance mathematics achievement in a variety of ways. A curriculum that focuses on computational procedures may lead to less imaging and use of that region of the brain involved in processing images may shutdown. Quick Draw fosters the use of spatial reasoning and can dramatically change how students do mathematics thinking.

Quick Draw is effective in giving meaning to geometric concepts. Using the figure shown at the right, the following fourteen geometric terms were named by one elementary school class:

Rhombus, parallelogram, hexagon, cube, polygon, trapezoid, square, triangle, equilateral triangle, congruent, similar, reflection, rotation. The correct mathematics names for geometric figures can be introduced. For example, students will say they see a diamond. Teacher response: "Yes, that is a diamond and that is a perfectly good everyday word. However the mathematics name for diamond is rhombus." Much, if not all geometry of the primary grades can be developed through Quick Draw.



Quick Draw encourages students to articulate their thinking. It is important for students to talk mathematics; much learning results from student-to-student communication. In Quick Draw, students are eager to explain to the class what they see. Even students who are reluctant to speak in mathematics class will eagerly put into words what they see; it is a non-threatening setting. Quick Draw can draw reluctant learners into engaging in other mathematics activities. The excitement is high when a student describes what they see that surprises others. For example, in the figure shown, students immediately say they see triangles but then someone says they see a hexagon and many oohs and aahs can be heard. Then a student says, "I see a cube!" and this really creates a buzz in the class. Such comments as, "Where?" or "Oh yeah I see it now!" can be heard.

When students are describing what they see, they are learning to put their thoughts into words and this carries over to explaining how they solved a non routine problem. Often students are unable to explain how they solved a

problem saying, "It just popped into my mind." or "I just knew it." Being able to explain in words how they solved a problem leads to greater mathematics power.

Students enjoy Quick Draw. The positive attitudes developed during Quick Draw often leads to students saying, "I like math." We all know that building self-esteem and positive dispositions results in greater success in mathematics.

Often, when Quick Draw is used as a lesson opener, students who may have had little success in mathematics come alive. Students who think they can't do math have success with Quick Draw and change their mind. Teachers are surprised that some students who may be floundering in class turn out to be very good at Quick Draw. Research shows that students who are good at Quick Draw have the potential to reason mathematically.

Some students have difficulty seeing certain geometric shapes in a Quick Draw. An effective way to help students "see" imbedded figures such as parallelograms and cubes is to use a blank transparency over the figure and trace the target shape a student has identified. When the transparency with the figure on it is moved off the figure, it is easily observable. If a trapezoid is traced in this figure, it can be rotated and reflected to fit on other trapezoids. Thus students can give meaning to reflections and rotations.